TECHNICAL SPECIFICATIONS

WASHINGTON STATE FERRIES

M.V. HIYU DRYDOCKING

CONTRACT NO. 00-7166

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TECHNICAL SPECIFICATIONS

For the following Technical Specifications, the Contractor is to provide all labor, material and equipment to accomplish each and every Bid Item unless otherwise specified.

The Specification Item sub-titles in brackets are for WSF internal Use only, for Life Cycle Cost modeling. Bidders should ignore such bracketed sub-titles.

1. DRYDOCK VESSEL
{MAINTENANCE}

M.V. HIYU Vessel Particulars:
Length: 162'0", **Beam:** 63'-1", **Draft:** 11'-3", **Gross Tons**: 498.

A. Drydock Vessel for cleaning, painting, inspections, the work specified herein and any necessary repairs.

B. Block spacing shall be at twelve foot (12') centers. Within twenty-four (24) hours of Docking, provide three (3) copies of the block position drawing to the WSF Inspector indicating the block positions used.

C. Vessel shall be blocked to expose the block positions used at the previous docking. **Attachment No. 2**, "Block Position Form" showing previous docking position, is provided for reference.

2. TEMPORARY SERVICE
{MAINTENANCE}

A. Install one (1) telephone on board in a location designated by the Vessel Staff Chief Engineer. The telephone is to have one (1) outside line with toll-free access to Seattle and vicinity and, if different, one (1) line for local numbers. The telephone shall have touchtone service if available from the Contractor's telephone system.

B. Provide and maintain electricity, water, safe lighted gangway, sewage removal and trash removal services while Vessel is in the Contractor's facility.

C. Provide Safety and Security for the entire Vessel throughout this Contract period until such time as the WSF has accepted redelivery of the Vessel. Every reasonable precaution shall be taken to protect the Vessel from the hazards of fire, flooding, pilferage, malicious damage, and other events including cataclysmic phenomena of nature.

D. Provide and maintain comprehensive and effective fire prevention and fire detection, and fire fighting programs and systems sufficient to ensure the safety and integrity of the Vessel. Provide personnel trained in shipboard fire fighting techniques and also trained to cooperate with and assist local fire fighting organizations. Provide sufficient shore fire lines to ensure an adequate supply of fire fighting water, at sufficient pressure, and maintain an adequate number of tested fire-hoses aboard the Vessel to effectively fight fires at any location in the Vessel.

E. Provide and maintain portable fire extinguishers in sufficient quantity, and of the appropriate type, to combat local fires of any class.

F. Provide sufficient fire watches, including roving watches as may be required, to ensure that fires that may be inadvertently started by welding sparks or heat, electrical malfunction, or spontaneous combustion are detected, reported and promptly extinguished.

3. SEA VALVE INSPECTION

{MAINTENANCE}

A. Remove and open the below listed sea valves; clean, check valve disk for proper seating using prussian blue and inspect for proper water tightness (valve disk to valve seat contact), including valve stems. All valves two inch (2") and under shall be replaced with new Contractor furnished valves, the removed valves shall be left with the Vessel Staff Chief Engineer.

For the M.V. Hiyu

Qty	Service	Size	Type
2	Main Engine Sea Suction	6"	Globe
1	Vent	3/4"	Ball
2	Blow down valve	3/4"	Globe

B. Sea valves shall be inspected by the WSF and USCG Inspectors, and Vessel Staff Chief Engineer for the following:

1) General material condition.

2) Valve disk to valve seat contact.

3) Proper mechanical operation.

C. Prior to installation, hydrostatically test all new and reconditioned valves to the satisfaction of the WSF and USCG Inspector and Vessel Staff Chief Engineer.

D. After acceptance of inspection reassemble/install valves using new braided teflon valve stem packing and new gaskets on all valve connections.

E. Provide three (3) written copies of the report of test, inspection, all repairs to existing valves and all new valves installed to the WSF Inspector.

F. Inspect for water leakage prior to launching. Any leakage will be repaired at the Contractors expense.

4. ZINC RENEWAL

{MAINTENANCE}

A. Remove and reinstall:

1) Twenty (20) 1¼" x 6" x 12" new bolt-on zincs.

2) Eighteen (18) 1¼" x 6" x 12" Strap type bolt on hull zincs.

3) Two (2) 1¼" x 6" x 12" Sea chest zincs.

5. RUDDER INSPECTION, NO. 1 AND NO. 2 ENDS
{MAINTENANCE}

A. Erect staging or provide suitable lifting device on both sides of No. 1 and No. 2 End Rudders for inspection. Remove staging upon completion of all affiliated work.

B. Conduct a satisfactory pressure test for leaks in the presence of the WSF and USCG Inspectors. Pressure test will consist of using forty-two inches (42") of water with Manometer or 1.5 PSI on acceptable calibrated pressure gauge that has 1.5 at mid scale range. Accepted test is no leaks for one (1) hour. Provide three (3) copies of the test results to the WSF Inspector.

C. Take and record clearances of the rudder pintle and rudder stock bearings on No. 1 and No. 2 End Rudders. Submit three (3) copies of a written report of findings to the WSF Inspector within 24 hours of drydocking Vessel.

6. PROPELLER INSPECTION, NO. 1 AND NO. 2 ENDS
{MAINTENANCE}

A. Erect staging or provide suitable man lifting device on both sides of No. 1 and No. 2 End propellers for inspection. Remove staging upon completion of all affiliated work.

B. Polish the No. 1 and No. 2 End propellers by power disk sanding, using 80 grit or finer abrasive. Thoroughly clean propeller hub and blades for nondestructive testing.

C. Inspect No. 1 and No. 2 propellers for damage and proper blade track. Conduct a nondestructive test using Nondestructive Dye Test/Inspection, for surface cracks and other defects on the blades in the presence of the Vessel Staff Chief, WSF and USCG Inspectors. Submit three (3) copies of a written report of findings to the WSF Inspector within twenty-four (24) hours of test completion.

7. WAUKESHA SEAL INSPECTION, N0. 1 AND NO. 2 ENDS
{MAINTENANCE}

A. Erect staging or provide suitable man lifting device on both sides of No. 1 and No. 2 End for inspection. Remove staging upon completion of all affiliated work. Drain oil from the Waukesha seals.

B. Drain No. 1 and No. 2 End outboard stern seal units. Dispose of oil.

C. Take Waukesha seal wear-down reading on No. 1 and No. 2 Ends in presence of WSF Inspector and Vessel Staff Chief Engineer.

D. Remove and reinstall rope guards as required.

E. Fill No. 1 and No. 2 Outboard Waukesha seals with Hyperlube or STP.

F. Submit three (3) copies of a written report of findings to the WSF Inspector within twenty-four (24) hours of test completion.

PAINTING OF VESSEL AND HULL PRESERVATION

(ATTACHMENT NO. 1)

Area Preparation, Surface Preparation, Paint Coatings, and Inspection for Vessel's hull, curtain plates, casing and super structure shall be in accordance with Washington State Ferries Marine Coating Specification, dated 1/03 unless otherwise specified in the following Specifications.

8. FRESHWATER WASH OF VESSEL HULL AND GUARD {MAINTENANCE}

A. Within twenty-four (24) hours of Drydocking Vessel, provide labor, material and equipment to Low-Pressure Water Clean (LP WC) at 3,000 to 5,000 psi in accordance with SSPC-SP 12/NACE 5. The wand shall be held no more than twelve inches (12") from the surface being washed. Wash the entire hull, from the top of the guard to the keel, including flat keel, sea chests, strainer plates, propellers, and rudders. The wash shall leave no visible growth or residue after the hull dries from washing. Remove and replace the sea chest strainer plates as necessary. Prior to reinstalling sea chest strainer plates, the contractor shall conduct an inspection with WSF Inspector and the Vessel Staff Chief Engineer.

9. PREPARATION FOR EXTERIOR HULL BLASTING AND PAINTING {MAINTENANCE}

NOTE:

Care shall be taken to avoid damage to the "CAPAC" anodes and reference cell.

A. Install protective covering on propellers, shaft seals, propeller bearings, exposed shafting, upper and lower rudder bearing areas, pintle pin bushing, CAPAC anodes and reference cell, all through-hull penetrations, sea valves, and entrance ways to protect and prevent grit blast material from causing damage or entering Vessel. Prior to any grit blasting the Contractor shall conduct a cover up inspection with the WSF Inspector and the Vessel Staff Chief Engineer.

B. Upon completion of hull grit blasting and removal of cover up material, conduct an inspection in the presence of the WSF Inspector and the Vessel Staff Engineer.

10. BLASTING OF THE GUARD AND ANTI-CORROSION COATING {MAINTENANCE}

NOTE:

For purposes of bidding assume that **200 Square Feet** of the Guard will require grit blasting to SSPC-SP6, Commercial Blast Cleaning and Painting. Upon completion of the grit blast, the Contract will be adjusted upward or downward to account for the actual scope of grit blasting authorized by the WSF Inspector.

NOTE:

The Contractor shall have the option to UHP-WJ4, Ultrahigh-Pressure Water Jetting only if the hull profile is taken and is within the required profile in **Attachment No. 1** and approved by the WSF Inspector.

A. Grit blast areas of abrasion and corrosion on the horizontal and vertical surfaces (top, bottom, and side) of the guard, as authorized by the WSF Inspector, to an SSPC-SP6, Commercial Blast Cleaning.

B. The coating, for at least two inches (2”) bordering the blasted area, shall be feathered to a smooth surface.

C. Apply one (1) coat of INTERNATIONAL Intertuf 262 Series epoxy, Red, to a minimum of 5 mils (DFT) to all prepared surface areas repaired in this Item.

D. Apply one (1) coat of INTERNATIONAL Interguard 267, Buff, to a minimum of 5 mils (DFT) of contrasting color to all surfaces painted in paragraph “C” of this Work Item.

11. PAINTING OF VESSEL GUARD, FULL COAT
{MAINTENANCE}

A. Apply one (1) coat of INTERNATIONAL Intercare 755, Black, to a minimum of 2 mils (DFT) to all surfaces of the Guard (top, bottom and side).

12. BLASTING OF THE HULL BELOW THE GUARD AND ANTI-CORROSION COATING
{MAINTENANCE}

NOTE:

For purpose of bidding assume that **3,000 Square Feet** of hull below the guard will require grit blasting to SSPC-SP6, Commercial Blast Cleaning and painting. Upon completion of the grit blasting, the Contract will be adjusted upward or downward to account for the actual scope of blasting authorized by the WSF Inspector.

NOTE:

The Contractor shall have the option to UHP-WJ4, Ultrahigh-Pressure Water Jetting only if the hull profile is taken and is within the required profile in **Attachment No. 1** and approved by the WSF Inspector.

A. Blast areas of abrasion, corrosion, and steel repairs from bottom of guard to the keel; including flat keel, sea chests, strainer plates and rudders, to an SSPC-SP 6, Commercial Blast Cleaning, as authorized by the WSF Inspector.

B. The coating, for at least two inches (2") bordering the blasted area, shall be feathered to a smooth surface.

C. Apply one (1) coat of INTERNATIONAL Intertuf 262 Series epoxy, Red, to a minimum of 5 mils (DFT) to all prepared surface areas repaired in this Item.

D. Apply one (1) coat of INTERNATIONAL Interguard 267, Buff, to a minimum of 5 mils (DFT) of contrasting color to all surfaces painted in paragraph "C" of this Work Item.

13. ANODE AREA CAPASTIC REPLACEMENT
{MAINTENANCE}

NOTE:

For bidding purposes, assume that **25 Square Feet** of failed capastic will require repair. The capastic shall be applied to a minimum thickness of ⅛ inch in the area of the shield out from the faired in area around the anode. The capastic shall be troweled so as to achieve a smooth overall surface.

A. Renew capastic around the CAPAC anodes using 'Capastic' epoxy troweling compound made by ELECTROCATALYTIC, INC.

B. Build up a minimum of 22 mils DFT of epoxy Anti-Corrosion coating over the capastic areas and the secondary dielectric shield areas.

14. PAINTING OF VESSEL HULL, BELOW WATERLINE ANTI-FOULING {MAINTENANCE}

NOTE:

For bidding purposes, assume that **2,000 Square Feet** of the hull will require the first coat of ANTI-FOULING COATINGS. The Contract will be adjusted upward or downward, using the square footage determined in Grit Blasting Hull Item.

A. Apply one (1) coat of INTERNATIONAL INTERSPEED ANTIFOULING, BRA 640, Red, to a minimum of 4 mils (DFT) to all surfaces painted below the waterline Item.

15. PAINTING OF VESSEL HULL, BELOW WATERLINE ANTI-FOULING (FULL COAT) {MAINTENANCE}

A. Apply one (1) full coat of INTERNATIONAL INTERSPEED ANTIFOULING, BRA 640 anti-fouling, Black, to a minimum of 6 mils (DFT) to all surfaces of hull below the waterline.

16. DRAFT MARKS {MAINTENANCE}

A. Repaint all draft marks and underwater hull markings, using INTERNATIONAL Interlux Y5584, Shark White.

17. PAINTING OF VESSEL HULL, ABOVE THE WATERLINE {MAINTENANCE}

NOTE:

For purpose of bidding assume that **1,000 Square Feet** of hull above the waterline will require painting. The Contract will be adjusted upward or downward using the square footage determined in Grit Blasting Hull Item.

A. Apply one (1) coat of INTERNATIONAL, Intercare 755, WSF Green, to a minimum of 2 mils (DFT) to all surfaces prepared above waterline in Grit Blast Hull Item.

B. Apply one (1) coat of INTERNATIONAL Intercare 755, Black, to a minimum of 2 mils (DFT) to the entire guard.

18. GAUGE VESSEL STEEL
{MAINTENANCE}

A. Perform an ultrasonic survey of the Vessel's steel plating thickness in the following locations three (3) girth belts (including the auto deck), girth belts shall be at frame 40 both Ends, and No. 2 End, between 10-12 frames, 20 shots per belt, 60 total shots; plates in the wind and water areas, port and starboard sides, full length – 40 shots per side, 80 total shots; keel plating – 20 shots; Car Deck and Superstructure areas – 50 shots; suspect areas as directed by the WSF Inspector and Vessel Staff Chief Engineer 50 shots. The survey shall be performed in the presence of the WSF Inspectors. Estimate that Three Hundred ten (310) shots will be required.

B. The readings shall be taken from the exterior of the hull and deck when the Vessel is in drydock by a qualified NDT Inspector within seventy-two (72) hours of drydocking. The exact areas to be surveyed in Paragraph A of this Item will be designated by the WSF Inspector. Provide personnel lift capable of reaching all portions of the hull from the guard down to the keel. The readings may be taken through the paint in areas where paint is smooth enough if the equipment being used is capable of doing so. In areas disturbed by this work, remove and restore paint as necessary, using the proper coating as existing system.

C. Provide the WSF Inspector with three (3) copies of the report in tabular form, identifying the locations of readings by location, original plate thickness, audio gauge reading taken, and percent wastage. Attach a schematic showing the locations shots were taken and thickness found.

19. TOWING OF VESSEL
{MAINTENANCE}

A. At delivery, tow Vessel from its moorage at WSF's Eagle Harbor Maintenance Facility on Bainbridge Island. For redelivery, tow the Vessel from the Contractor's facility to WSF's Eagle Harbor Maintenance Facility.

(**END**)